Answers to Questions Received at Workshop No. 1 held on Sept. 20, 2001

The following questions were asked at Workshop No. 1. Answers were prepared by John Olaf Nelson Water Resources Management (JONWRM).

1. **Is funding available in New Agreement for adequate watershed protection or restoration? Upslope acquisition?**

Answer: Is it available? Yes. Is it adequate? Don't know.

The current agreement (11th Amended Agreement for Water Supply) between SCWA and the Water Contractors (the Cities of Cotati, Petaluma, Santa Rosa, Rohnert Park, and Sonoma; and, the Forestville, North Marin, and Valley of the Moon Water Districts) provides the following:

> Section 4.17 (a) provides for a Russian River Conservation Charge and (b) provides for the Russian River Projects Charge. These are charges collected from contractors outside of Sonoma County – namely North Marin Water District and Marin Municipal Water District. Receipts are credited to the Russian Rive Projects Fund. The Russian River Conservation Charge is made in-lieu of property tax payments levied on property in Sonoma County for the Warm Springs Dam Project. The Russian River Projects Charge is made in-lieu of: (a) property taxes levied on property in Sonoma County and (b) other SCWA general fund monies, which are transferred into the Russian River Projects Fund for certain purposes. Section 1.1 (aa) of the agreement defines those certain purposes as follows:
>
> "Russian River Projects Fund" means the fund established by the Agency to pay or partially pay for:
>
> > (1) carrying out the Agency's Coyote Valley Dam Project and Warm Springs Dam Project channel-stabilization works obligations to the United States Government and the State of California under Agency Board of Directors Resolutions No. 6847 adopted May 24, 1955, No. 7798 adopted September 27, 1955, No. DR00793-1 adopted September 25, 1961 and Resolution No. DR68485 adopted December 23, 1980;
> >
> > (2) securing and defending appropriative water rights which are necessary for the realization of the full benefits of the Coyote Valley Dam and Warm Springs Dam Projects;
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> > (3) the Agency's share of the United States Government's investment, operation and maintenance, and major replacement costs associated with the Coyote Valley Dam and Warm Springs Dam Projects;
> >
> > (4) the acquisition of all or part of the Potter Valley Project or contributions made to the Project owner to insure the continued operation of all or part of the Project; and
> >
> > (5) fishery mitigation and enhancement projects undertaken by the Agency in the Russian River and Eel River and their tributaries.

Total revenues to the Russian River Projects Fund in FY 2000-01 were $1.9 million. Total expenditures were $4.6 million (includes a major one-time expenditure of $1.9 million for the Healdsburg dam and fish ladder).

2. What is demand projection for 2037?

Answer: Average annual demand on the aqueduct system for the three fiscal years ending June 30, 2001 was 61,646 acre-ft. (This excludes 377 acre-ft/yr of sales of surplus water and 2,500 acre/ft per year of assumed aqueduct system losses.)

The Final EIR (1998) for the Water System and Transmission Project, which is, authorized in the current 11th Agreement projects comparable annual demand to be 98,500 acre-ft based on growth allowed in current adopted General Plans (Table 4-A of Vol. 1 of Final EIR). This amount is approximately 6,600 acre-ft less than the actual projected total based on assumption that the current authorized conservation program effort will yield that much in ongoing annual savings. When this level of demand would be realized depends on assumptions contained in each of the general plans.

For project repayment purposes, SCWA, in its recently updated financial plan (see Table 1, SCWA Water Supply and Transmission System Project Economic and Financial Report, September 2001) assumes annual demand will grow at the compound rate of 1% per year and reach 87,967 acre-ft by fiscal year 2037, an increase of 26,320 acre-ft per (excludes aqueduct system losses and 415 acre-ft of projected surplus water sales but includes reductions of 6,600 acre-ft per year expected from conservation).

3. What is a "water shortage"?

Answer: The 11th Amended Agreement (Section 3.5) provides for allocation of water in the event of a water shortage. Two types of shortage are addressed: (1) a deficiency in the quantity of water that is available to the SCWA for diversion and rediversion under the SCWA's water rights, and (2) a temporary impairment of the capacity of the Transmission System by reason of natural disaster, sabotage or other causes beyond the control of the SCWA.

The SCWA has developed a recommended model rationing ordinance and plan for each Water Contractor to consider adopting for responding to the first type of shortage. Regards the second type of shortage, the parties to the new agreement negotiation have entered into an agreement with the SCWA entitled "MOU Regarding Water Transmission System Capacity Allocation During Temporary Impairment" (MOU re Interim Impairment). It preempts the language of the 11th Amended Agreement with respect to a temporary impairment condition and sets up a precise allocation of available water during impaired summer demand periods for the next 5 years.

4. What about desalinization?

Answer: In the past and for now and the foreseeable future, it does not appear desalinization is competitive with other alternatives.

A recent study by the Marin Municipal Water District estimates the cost to construct and operate

a desalinization treatment plant to run about $1,120 per acre-ft (15 million gallon per day plant). This does not include the cost of an aqueduct connecting the source to the service area. On the other hand, the cost of water delivered to the water contractors from the SCWA aqueduct system is less than $400 per acre-ft. Projected costs of aqueduct water do not exceed $740 per acre-ft for service from any of the SCWA aqueducts (Sept. 2001 updated Water Supply and Transmission System Project Economic and Financial Report). Conservation efforts, even for more aggressive strategies, generally cost less than $1,000 per acre-ft . Recycled water development is estimated from the SCWA's Preliminary Assessment of Urban Water Reuse November 1999 Report to be on the order of $820 per acre-ft. and this figure includes delivery pipelines.

5. Does 2-year debt payoff include Lake Sonoma?

Answer: No. The 2-year debt payoff noted in the slide talk given at Workshop 1 and on page 8 of the Background Information Report refers to the payoff of current Transmission System facilities (aqueducts, tanks, pumps, diversion facilities) that comprise the existing SCWA aqueduct system. It does not include debt service to the federal government for the Warm Springs Project.

6. What happens to excess water allocations?

Answer: By excess water allocations, it is assumed questioner means water available in excess of a given water contractor's entitlement. The 11th Amended Agreement for Water Supply (Section 3.3) allows delivery of such water to other water contractors provided the following conditions are met:

> first, that such excess delivery does not impair or delay the delivery to any other Water Contractor of its entitlements; and
>
> second, that the Water Contractor taking the excess delivery is proceeding in good faith, with plans and funding to develop a reliable water supply, sufficient to supply its needs; and
>
> third, that either
>
> > (1) all the Water Contractors approve such excess delivery; or
> >
> > (2) such excess delivery is made during a period when another Water Contractor is not using its full entitlements, such excess delivery does not exceed the unused amounts of said contractor's entitlements, and said contractor has notified the Agency in writing of its consent to said delivery.

7. Does industrial water cost the same as residential?

Answer: Assuming question refers to sales from the aqueduct, the answer is "Yes". Regarding sales from the "downstream" systems owned and operated by the cities and districts, policies vary but for the most part water sold to industrial customers is sold at the same commodity rate as water sold to residential customers. For utilities who employ tiered rates, industrial customers generally pay the weighted average rate paid by residential customers. The reason for this is that

the tier blocks designed for typical residential users and would be unfair to apply to industrial or commercial customers due the high variation of use in these customer classes.

8. What happens to conserved water?

Answer: It generally goes into the pot so to speak and is simply "recognized" by the physical system as an absence in demand that would otherwise be there. During a drought, some utilities keep track of conserved water and allow the customer to bank unused allotments and use it in a subsequent billing period. This is usually practiced only if the shortage is very severe and end users are under mandatory allotment rationing. Also required is a modern, user friendly billing system.

9. How does the conserved amounts compare to new development?

Answer: Referring to Question 2, we see that the lowest increase in annual demand forecast by the SCWA (excluding conservation savings) is 26,320 + 6,600 = 32,920 acre-ft of annual demand by 2037. The current long-term conservation goal is to reach an on-going level of saved water of 6,600 acre-ft per year. Therefore, estimated conservation savings can be approximated to meet 6,600/32,920 or 20% of the lowest forecast of new demand. We say approximate because some of the 6,600 acre-ft conservation goal was achieved before FY 2000-01.

10. Will vineyards continue to grow even though they are 1 of 3 biggest users of water?

Answer: Don't know the answer to that.

It is noted that a 1999 Press Democrat article reported that after 3 years of study a team of UC researchers estimates there are 158,000 acres of land that are "suitable" for grapes within the county's existing appellations and that if all 158,000 acres were converted to grapes, it would about quadruple the current vineyard acreage in Sonoma County. The article stated few experts think that will ever happen. (Source: Press Democrat: Oct. 31, 1999, "Researchers map possible path of Sonoma County vineyards" by Ted Appel)

The 1999 County Agricultural Crop Report shows 56,267 acres planted in fruit, nut and wine grapes of which 51,467 acres (92%) are wine grapes. Grape acreage in the 1940s ran about 20,000 acres. The amount of grapes under irrigation is not kept track of by the office of the Agricultural Commissioner. Grapes require considerably less water than do other types of fruit crops.

11. Have all the contractors received conservation money from the SCWA? Is it equitably apportioned?

Answers: Yes, all of the Water Contractors have received money from the SCWA for water conservation programs. Apportionment of funds was worked out mutually between the contractors and SCWA.

12. How does Eel River play into water issues?

Answer: Eel River water provides irrigation water for Potter Valley and contributes additional storage controlled by Lake Mendocino and thus increases in-stream water in the Russian River and benefits all entities, farms and persons drawing water from the Russian River downstream of Coyote Dam. The nature of its impacts is very far-reaching. The SCWA has various model analyses of the Potter Valley Project diversions. The most recent the author is aware of was made available to the WAC circa July 2000 and is entitled "Allocation of Water Supply Benefits of the Potter Valley Project". It concludes that if the costs of the Potter Valley Project were shared in proportion to its water supply benefits, the Potter Valley Irrigation District would pay about one-third, the Mendocino County Russian River Flood Control and Water Conservation District one-third, and Sonoma County interests one-third. Sonoma County's one-third would be allocated about one-third to Alexander Valley and two-thirds to the Sonoma County Water Agency Water Transmission System.

13. Percent of total flow of Eel that is diverted?

Answer: From available long-term USGS reports, diversions into Potter Valley at Van Arsdale have averaged 146,400 acre-ft per year for the period 1910-1999. Eel River watershed area above the diversion is 349 sq miles. Historic runoff passing downstream of Van Arsdale averaged 335,000 acre-ft per year (1923-1999). Runoff near the lower end of the Eel River at Scotia averaged 5,333,000 acre-ft per year (1911-1999). Watershed drained at Scotia is 3,113 sq miles. Total drainage area of the Eel River system is 3,684 sq miles. The percent of total flow diverted into the East Fork of the Russian River, based on available USGS gage information, is therefore 30% of the average annual runoff available at Van Arsdale (the point of diversion) and 3% of the average total runoff from the Eel River based on measurements at Scotia. Corresponding diversions in the 1999 water year (Oct. 1998 – Nov. 1999) were 153,100 acre-ft, and amounted to 26% of the amount available for diversion at Van Arsdale and 2% of total runoff.

14. What studies are done to show the effects of building in flood plains? What have the impacts been of allowing building in flood plains, e.g. Petaluma and Cotati?

Answer: Section 3.3, paragraph PS-2d or the 1989 County of Sonoma General Plan indicates analysis of the potential flood hazards and drainage impacts associated with adopted land use plans will be prepared for each major watershed in the county. In March of 1986, the SCWA published the Petaluma River Watershed Master Drainage Plan. I understand this document is scheduled to be updated in the next year or so. Also the U.S. Corps of Army Engineers prepared the Final EIS/EIR, Petaluma River California Detailed Project Report for Flood Control dated March 1995.

15. What provisions are, or will be in place to minimize water supply shortages during drought years?

Answer: Since the early 1990's, state law requires that urban water suppliers serving more than 3000 customers or more than 3,000 acre-ft per year must maintain a Water Shortage Contingency Plan. A copy of current adopted plans for Water Contractors is contained in Appendix D of the SCWA Year 2000 Urban Water Management Plan. These plans are specific

and outline the steps and policy the local supplier intends to activate in the event of a serious shortage.

Last year, JONWRM, under contract to SCWA, prepared a model water rationing plan which consisted of a model ordinance supported by two EXCEL spreadsheet models which calculate rationing levels and revenue losses given input on local supply capability and predicted aqueduct deliveries. This plan was provided to all water contractors for consideration when updating their local water shortage contingency plans. Chapter 7 of the SCWA Year 2000 Urban Water Management Plan describes the model plan and a copy of the proposed implementing ordinance is contained in Appendix D of the plan.

16. Who polices water rights?

Answer: The following is taken from University of California Cooperative Extension pamphlet "Vineyard Site Assessment Guide" dated June 2000:

> "Water use in California is governed by appropriative, riparian and overlying water rights. Appropriative rights are defined as physical control of water and, since 1914, require a permit or license for water use. Riparian rights are granted by the ownership of property that touches a river, stream, pond, or lake, as well as lands that regularly receive floodwaters. Overlying rights to groundwater are afforded to property above a common aquifer. In general, riparian and overlying rights are senior to appropriative rights. Appropriative right prioritization is made in accordance to seniority in use. However, these rights are correlative, preventing unlimited removal of water without regard to others' needs. This is established by the Water commission Act of 1913 and Article X, Section 2, amendment of the California Constitution requiring "beneficial and reasonable" use of all water. In come cases, the correlative use of water forces adjudication of water rights. Adjudication calls upon the courts to settle disputes over the quantity of water that can be rightfully extracted."

Jurisdiction:

Appropriative Water Rights – State Water Resources Control Board, Division of Water Rights, 1001 I St, 14th Floor, Sacramento, CA 95814, Ph (916) 657-2170

Riparian Water Rights – Start with the State Water Resources Control Board, Division of Water Rights, but ultimately, a court having jurisdiction.

Wells – Sonoma County Permit and Resource Management Department*, 2550 Ventura Ave., Santa Rosa, CA 95403, Ph (707) 565-2231

* operating under policy promulgated by the California Department of Water Resources, Division of Planning and Local Assistance

Agencies having jurisdiction over water rights generally have authority to police and enforce their legitimately applied authority. Generally they do not, however, and instead rely on complaints or requests for changes in permits that come before them, before taking steps to resolve problems that may exist. Ultimately, most decisions/actions of the administrative agencies can be appealed to a court having jurisdiction.

17. Does WAC operate under Brown Act?

Answer: Yes.

18. How will agency deal with SB 221?

Answer: SB 221 does not apply to SCWA since it does not retail water. It does apply to all the urban contractors, however.

SB 221 provides that land use approval agencies (cites or counties) cannot approve a residential subdivision of 500 or more dwellings or which exceed 10% of the number of connections (in the case of systems having less than 5,000 connections) unless it has received verification, in writing, from the public water system that sufficient water supply is available. Sufficient water supply means the total water supplies available during normal, single-dry and multiple-dry years within a 20 year projection that will meet the projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including but not limited to agricultural and industrial uses. In determining sufficient water supply, the law states a number of factors shall be considered. These include (paraphrasing): the historic 20 year record, actions pursuant to an urban water shortage contingency plan, allocated supply reductions during a shortage, and supplies/offset demand reasonably expected from other sources/actions (conservation, recycling, conjunctive use, transfers, etc.) Substantial evidence is required to support verifications. Urban reconstruction, infilling and lower income housing projects are exempt from the requirement.

In conclusion it would appear that if a given supplier has in place an overall plan (or plans) based on historic water availability seen over a 20 year period, and expected water available over a 20 year forecast period from surface supply, ground water, conservation, transfers and/or recycling projects, taking into account demand that can be reasonably expected to be reduced in a crisis pursuant to the supplier's water shortage contingency plan, and that if such overall plan is designed to meet the demands forecast to meet applicable land use plans, and provided further that the overall plan is supported, as necessary and applicable, by contracts, water rights, and funding capability and commitments, that a letter of verification could be validly given.

19. Resources Board to take 20,000 acre-ft from Lake Sonoma?

Answer: It is assumed the question pertains to expansion of water rights sought by the SCWA. The SCWA, on November 15, 1999 filed petitions to change four water permits (12947A, 12949, 12950, and 15596) which would, among other things, increase diversion rights from Lake Sonoma from 75,000 to 101,000 acre-ft per year. These petitions now reside with the State Water Resources Control Board and await to be heard. Application Number.30981 has been assigned.

20. Are recreational uses being considered in the agreement?

Answer: Recreational uses within the service areas of the water contractors, which are served potable water, make up part of the demand on the aqueduct and are included in demand forecasts. In-stream recreational uses are beneficial uses considered by the State Water Resources Board when making decisions regarding requests for appropriations for water and are considered in model studies prepared by the SCWA.

21. How much water is being taken form the Eel River and what is the effect of the Eel River on the Russian River?

Answer: See answers to Questions 12 and 13.

22. What is being done to fix leaks?

Answer: Leaks in the distribution systems of the Water Contractors and on the customer side of meters is where most leakage potential exists. Until adoption of the 11th Amended Agreement and the MOU re Interim Impairment, practices of the Water Contractors varied as to how aggressive leak detection and repair was pursued. Now contractors are bound by the provisions of Best Management Practice No. 3, which states:

"3. System Water Audits, Leak Detection And Repair

A. Implementation

Implementation shall consist of at least the following actions:

a) Annually complete a prescreening system audit to determine the need for a full-scale system audit. The prescreening system audit shall calculated as follows:

i. Determine metered sales;
ii. Determine other system verifiable uses;
iii. Determine total supply into the system;
iv. Divide metered sales plus other verifiable uses by total supply into the system. If this quantity is less than 0.9, a full-scale system audit is indicated.

b) When indicated, agencies shall complete water audits of their distribution systems using methodology consistent with that described in the American Water Works (AWWA's) Water Audit and Leak Detection Guidebook.

c) Agencies shall advise customers whenever it appears possible that leaks exist on the customer's side of the meter; perform distribution system leak detection when warranted and cost-effective; and repair leaks when found.

B. Implementation Schedule

Agencies signing the MOU or becoming subject to the MOU after December 31,1997, implementation shall commence no later than July 1 of the year following the year the agency signed or became subject to the MOU.

C. Coverage Requirements

a) Agency shall maintain an active distribution system auditing program.

b) Agency shall repair identified leaks whenever cost-effective.

D. Requirements for Documenting BMP Implementation

a) Prescreening audit results and supporting documentation;

b) Maintain in-house records of audit results or the completed AWWA Audit

Worksheets for each completed audit period.

E. Criteria to Determine BMP Implementation Status

a) Agency has annually completed a pre-screening distribution system audit.

b) Agency has conducted a full system audit consistent with methods described by AWWA's Manual of Water Supply Practices, Water Audits and Leak Detection whenever indicated by a pre-screening audit.

F. Water Savings Assumptions

Unaccounted water losses assumed to be no more than 10% of total water into the water supplier's system."

23. What is being done to recycle water, use natural plant-based methods for cleaning water?

Answer: A number of cities/special districts have implemented substantial recycled water projects serving agricultural (Santa Rosa, Windsor, Rohnert Park, Petaluma and Sonoma). Some have already implemented urban water reuse projects (Santa Rosa, Windsor, Rohnert Park, Petaluma and Marin Municipal Water District). Some have projects in the active development stage (Forestville Water District, North Marin Water District) or are working on plans to expand urban water reuse applications (Santa Rosa, Windsor, Rohnert Park, Petaluma, Marin Municipal Water District)

An assessment of the potential to expand recycled water for urban reuse purposes within the service areas of the parties to the new agreement was prepared and set forth in a report by SCWA dated November 1999 entitled "Preliminary Assessment of Urban Water Reuse, SCWA Service Area, Sonoma County and Marin Counties". The report enumerates $41.8 million in projects in eight urban service areas estimated to have a recycled water production potential of 4,200 acre-ft per year. The MOU re Interim Impairment (signed March 1, 2000) provides a mechanism for funding local recycled water projects. A project in Forestville is included in the current budget year. Water Contractors are currently debating a 20 million dollar program funding commitment for projects that would be commenced in FY 2002-03.

None of the currently implemented projects rely on marsh type purification systems although a number utilize low tech./low energy aerobic oxidation pond technology and some of the water contractors are considering such technology.

24. What has the impact of grape growing been on the water use in Sonoma County?

Answer: A good recent analysis was not found. One study that is being awaited is a 1999 Land Use Survey conducted by the California Department of Water Resources. Also the SCWA has plans to develop a GIS database of agriculture land use in the Russian River watershed.

Acreage in grapes in 1999 was reported by the County of Sonoma Agricultural Commissioner to be 51,467 acres and comprise 92% of total fruit, nut and grapevine acreage in Sonoma County. A breakdown of irrigated acreage for the Russian River hydrologic unit by the State Department of Water Resources for 1997 (the last year they have compiled data for) showed 56,000 acres under

irrigation (includes pasture). Of this amount, 38,400 acres (68%) was devoted to irrigation of vineyards. Checking with vineyard association sources, estimates of the portion of total vineyard acreage that is irrigated varied from 66% to 85%.

In addition to lands newly planted for the first time, many vineyards that have been installed have replaced deciduous orchard crops. Water is applied to grapes to increase yield/quality and for frost protection. It is substantially less than the amount of water applied to deciduous orchard crops. Typical water duty reported by the California Department of Water Resources in their Bulletin 160 series cites annual applied water demand for grapes in the North Coast area at 0.9 acre-ft per acre and for deciduous orchard at 2.8 to 3.0 acre-ft per acre. The 1997 USDA Census of Agriculture reported irrigated cropland (excludes pasture) in Sonoma County in 1992 was 40,586 acres and in 1997 was 49,261 acres, an increase of 8,675 acres. It is estimated that virtually all of this increase is vineyard irrigation. The increased annual demand in Sonoma County represented by growth in irrigated vineyards over the 5-year period ending 1997 is therefore estimated to be 8,675 x 0.9 = 7,808 acre-ft.

25. How much natural habitat has been lost in wetlands and surrounding areas?

Answer: Studies are ongoing as of this writing. Rough estimates indicate 150 miles of spawning habitat has lost due to the construction of Coyote and Warm Springs dams. Furthermore, loss of riparian habitat in the main stem of the 110-mile long Russian River is estimated at 35% to 50%. Source: Staff person with Circuit Rider Productions, Inc.

26. Why is amount of water needed?

Answer: It is assumed the question refers to water needs of cities and districts drawing water from the aqueduct. Need is for area residential, commercial, industrial and institutional uses not met from local supplies (local wells or surface water). The why of it is explained by the growth potential built into adopted general plans of the cities and the County of Sonoma.